UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

Memorandum

Subject: Annual Monitoring Network Plans

From: Matthew Lakin, Manager
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To: Region 9 Air Pollution Control Agencies

This document outlines the information that is required to be submitted to EPA Region 9 as part of the Annual Monitoring Network Plans due by July 1st of each year. We thank you for the time and attention you pay each year while developing these documents. The plans provide an opportunity for each agency to evaluate its existing network, and allow the public and EPA to understand the monitoring network.

In 2007, the first year in which EPA's regulations required submission of an annual monitoring network plan, EPA Region 9 issued an "Annual Monitoring Network Plan for 2007" memo outlining the information that is required to be submitted as part of the annual plans. Since that time, there have been several changes to monitoring requirements of 40 CFR Part 58. This updated memo provides information reflecting changes in regulation since 2007 and highlights plan elements that have not always been addressed to the desired level of detail.

We recognize that this memo is being sent only a few months before plans are due, and that agencies typically produce plans well ahead of July 1st in order to provide time for internal review and public notice and comment. We hope that you will be able to address the elements noted in this memo in your plans submitted this year, and will expect that all elements will be addressed in plans submitted in 2013.

In preparing your annual network plan, we encourage you to pay particular attention to the following plan elements:

- Minimum Monitoring Requirements. Agencies should provide the information detailed in Appendix G, including information on design values and CBSAs/MSAs.
- Collocation. Network plans should contain information on how collocation requirements are being met. See Appendix E for an explanation of collocation requirements.
- Detailed Site and Monitor Information tables. While all network plans include site and monitor information tables, agencies should ensure that all required information

is provided, using the template in Appendix H for a complete list. Specific examples of required information include:

- Monitoring objective, site type, monitor type, method code, parameter code and POC should be included for each monitor.
- Sampling Frequency for $PM_{2.5}$ and PM_{10} sites. Sampling frequencies should be determined in accordance with 40 CFR 58. For easy reference, Appendices C and D describe how sampling frequency should be determined for each site.
- $PM_{2.5}$ information. When filling out the detailed site and monitor information tables (i.e. Appendix H), please ensure that your $PM_{2.5}$ information is correct. This includes clearly identifying method code, FEM/FRM/non-FEM/non-FRM status, which monitors are meeting collocation requirements (see Appendix E), and whether data are comparable to the NAAQS. If an FRM or FEM monitor is designated as not comparable to the NAAQS (specified by a non-regulatory monitor type in AQS), justification should be given for the choice of monitor type (see Appendix F).

As noted above, there have been several changes to monitoring requirements since EPA Region 9's memo from 2007. The specific requirements as of August 2011 are included in the CFR Elements Appendix A. General changes include new:

- NCore requirements (stations operational by January 1, 2011).
- Pb requirements: source-oriented (1.0 tpy or greater – monitors by January 1, 2010; 0.50 tpy – monitors by December 27, 2011), airport study monitors (by December 27, 2011), at urban NCore stations (population of 500,000 or greater – by January 1, 2012).
- SO_2 requirements: number of required monitors is based on the Population Weighted Emissions Index (PWEI) (operational by January 1, 2013).
- NO_2 requirements (address in July 1, 2012 plan).
- CO requirements: in CBSAs of 2.5 million persons or more (address in July 1, 2014 plan); other CO monitors (address in July 1, 2016 plan).

Appendices

Appendices A through H outline requirements and provide clarification on specific plan elements that are not always addressed to the desired level of detail. Appendices G and H provide suggested table formats for State and local agencies to use when reporting minimum monitoring requirements and detailed site and monitor information respectively. Although agencies are not required to include the exact tables included in these appendices, EPA encourages all agencies to include the tables. Regardless of how the information is presented, agencies must ensure that their network plans include all required information.

Appendix A provides the regulatory basis for the annual network plan. Agencies are also encouraged to include additional information that describes the ambient air monitoring network.

Appendix B discusses the process of selecting monitoring objectives, site types, monitor types, method and parameter codes for each individual measurement that is taken.

Appendix C provides information on sampling frequency for Manual $PM_{2.5}$.

Appendix D provides information on sampling frequency for PM_{10}.

Appendix E discusses collocation information for PM_{10}, $PM_{2.5}$, and Pb.

Appendix F provides a reference to the appropriate memos for an agency to consider if operating continuous $PM_{2.5}$ samplers.

Appendix G provides suggested table templates for agencies to report minimum monitoring requirements and design values for each of the criteria pollutants.

Appendix H provides a suggested format for detailed site and monitor specific information to be reported.

General Network Plan Overview

Submittal date: States must submit an annual network plan on July 1st of each year (beginning in 2007) to the Regional Administrator. State and local agencies should provide a copy of the submittal to the Air Quality Analysis Office Manager.

Public Inspection/Comment: The annual monitoring network plan must be made available for public inspection (website, hardcopy posting in libraries and public offices, and/or newspaper listing) for at least 30 days prior to submission to EPA. Although not required, EPA recommends soliciting comments concurrent with the public inspection period. Evidence of public inspection must be submitted. If an opportunity for public comment had been provided, comments received must be included in the annual network plan submission.

Types of Monitors to include in plan: Include establishment and maintenance of an air quality surveillance system that consists of the following:

1. State or Local Air Monitoring Stations (SLAMS).
2. Federal Reference Method (FRM).
3. Federal Equivalent Method (FEM).
4. Approved Regional Method (ARM).
5. National Core Multipollutant Monitoring Stations (NCORE).
6. Speciation Trends Network (STN).
7. Photochemical Assessment Monitoring Stations (PAMS).
8. Special Purpose Monitor (SPM).

Network modifications: A network plan that proposes SLAMS network modifications including new monitoring sites is subject to the approval of the EPA Regional Administrator according to 40 CFR 58.14. If you are requesting approval for modifications as part of your network plan, please include a demonstration of how the criteria in 40 CFR 58.14 have been met.

We look forward to your network plan submittals. Please contact me, Matthew Lakin, at (415) 972-3851 or lakin.matthew@epa.gov, or any of my monitoring team staff, should you have any questions.

APPENDIX A

This appendix lists the Annual Monitoring Network Plan Regulatory elements discussed in 40 CFR Part 58 as of August 21, 2011. Please ensure to check Part 58 every year as new modifications get incorporated from time to time.

40 CFR 58.10 states:

> (a)(1) Beginning July 1, 2007, the State, or where applicable local, agency shall adopt and submit to the Regional Administrator an annual monitoring network plan which shall provide for the establishment and maintenance of an air quality surveillance system that consists of a network of SLAMS monitoring stations including FRM, FEM, and ARM monitors that are part of SLAMS, NCore stations, STN stations, State speciation stations, SPM stations, and/or, in serious, severe and extreme ozone nonattainment areas, PAMS stations, and SPM monitoring stations. The plan shall include a statement of purposes for each monitor and evidence that siting and operation of each monitor meets the requirements of appendices A, C, D, and E of this part, where applicable. The annual monitoring network plan must be made available for public inspection for at least 30 days prior to submission to EPA.
>
> (2) Any annual monitoring network plan that proposes SLAMS network modifications including new monitoring sites is subject to the approval of the EPA Regional Administrator, who shall provide opportunity for public comment and shall approve or disapprove the plan and schedule within 120 days. If the State or local agency has already provided a public comment opportunity on its plan and has made no changes subsequent to that comment opportunity, and has submitted the received comments together with the plan, the Regional Administrator is not required to provide a separate opportunity for comment.
> (3) The plan for establishing required NCore multipollutant stations shall be submitted to the Administrator not later than July 1, 2009. The plan shall provide for all required stations to be operational by January 1, 2011.
>
> (4) A plan for establishing source-oriented Pb monitoring sites in accordance with the requirements of appendix D to this part for Pb sources emitting 1.0 tpy or greater shall be submitted to the EPA Regional Administrator no later than July 1, 2009, as part of the annual network plan required in paragraph (a)(1) of this section. The plan shall provide for the required source-oriented Pb monitoring sites for Pb sources emitting 1.0 tpy or greater to be operational by January 1, 2010. A plan for establishing source-oriented Pb monitoring sites in accordance with the requirements of appendix D to this part for Pb sources emitting equal to or greater than 0.50 tpy but less than 1.0 tpy shall be submitted to the EPA Regional Administrator no later than July 1, 2011. The plan shall provide for the required source-oriented Pb monitoring sites for Pb sources emitting equal to or greater than 0.50 tpy but less than 1.0 tpy to be operational by December 27, 2011.
>
> (5) A plan for establishing NO_2monitoring sites in accordance with the requirements of appendix D to this part shall be submitted to the Administrator by July 1, 2012. The plan shall provide for all required monitoring stations to be operational by January 1, 2013.
>
> (6) A plan for establishing SO_2monitoring sites in accordance with the requirements of appendix D to this part shall be submitted to the EPA Regional Administrator by July 1, 2011 as part of the annual network plan required in paragraph (a) (1). The plan shall provide for all required SO_2monitoring sites to be operational by January 1, 2013.
>
> (7) A plan for establishing CO monitoring sites in accordance with the requirements of appendix D to this part shall be submitted to the EPA Regional Administrator. Plans for required CO monitors shall be submitted at least six months prior to the date such monitors must be established as required by section 58.13.

With respect to CO monitoring network completion, 40 CFR 58.13(e) states that "CO monitors required under Appendix D, section 4.2 of this part must be physically established and operating under all of the requirements of this part, including the requirements of appendices A, C, D, and E to this part, no later than: (1) January 1, 2015 for CO monitors in CBSAs having 2.5 million persons or more; or (2) January 1, 2017 for other CO monitors". This

means that a plan for CO monitoring sites due for operation on January 1, 2015, is due to EPA on July 1, 2014 and a plan for CO monitoring sites due for operation on January 1, 2017, is due to EPA on July 1, 2016.

The remainder of Part 58.10 continues:

> (b) The annual monitoring network plan must contain the following information for each existing and proposed site:
>
> (1) The AQS site identification number.
>
> (2) The location, including street address and geographical coordinates.
>
> (3) The sampling and analysis method(s) for each measured parameter.
>
> (4) The operating schedules for each monitor.
>
> (5) Any proposals to remove or move a monitoring station within a period of 18 months following plan submittal.
>
> (6) The monitoring objective and spatial scale of representativeness for each monitor as defined in appendix D to this part.
>
> (7) The identification of any sites that are suitable and sites that are not suitable for comparison against the annual $PM_{2.5}$NAAQS as described in §58.30.
>
> (8) The MSA, CBSA, CSA or other area represented by the monitor.
>
> (9) The designation of any Pb monitors as either source-oriented or non-source-oriented according to Appendix D to 40 CFR part 58.
>
> (10) Any source-oriented monitors for which a waiver has been requested or granted by the EPA Regional Administrator as allowed for under paragraph 4.5(a)(ii) of Appendix D to 40 CFR part 58.
>
> (11) Any source-oriented or non-source-oriented site for which a waiver has been requested or granted by the EPA Regional Administrator for the use of Pb-PM_{10}monitoring in lieu of Pb-TSP monitoring as allowed for under paragraph 2.10 of Appendix C to 40 CFR part 58.
>
> (12) The identification of required NO_2monitors as either near-road or area-wide sites in accordance with appendix D, section 4.3 of this part.
>
> (c) The annual monitoring network plan must document how States and local agencies provide for the review of changes to a $PM_{2.5}$monitoring network that impact the location of a violating $PM_{2.5}$monitor or the creation/change to a community monitoring zone, including a description of the proposed use of spatial averaging for purposes of making comparisons to the annual $PM_{2.5}$NAAQS as set forth in appendix N to part 50 of this chapter. The affected State or local agency must document the process for obtaining public comment and include any comments received through the public notification process within their submitted plan.
>
> (d) The State, or where applicable local, agency shall perform and submit to the EPA Regional Administrator an assessment of the air quality surveillance system every 5 years to determine, at a minimum, if the network meets the monitoring objectives defined in appendix D to this part, whether new sites are needed, whether existing sites are no longer needed and can be terminated, and whether new technologies are appropriate for incorporation into the ambient air monitoring network. The network assessment must consider the ability of existing and proposed sites to support air quality characterization for areas with relatively high populations of susceptible individuals (e.g., children with asthma), and, for any sites that are being proposed for discontinuance, the effect on data users other than the agency itself,

such as nearby States and Tribes or health effects studies. For PM2.5, the assessment also must identify needed changes to population-oriented sites. The State, or where applicable local, agency must submit a copy of this 5-year assessment, along with a revised annual network plan, to the Regional Administrator. The first assessment is due July 1, 2010.

(e) All proposed additions and discontinuations of SLAMS monitors in annual monitoring network plans and periodic network assessments are subject to approval according to §58.14.

Per 40 CFR 58.10(a)(1), agencies must provide "evidence that siting and operation of each monitor meets the requirements of appendices A, C, D, and E" to 40 CFR 58, where applicable. EPA recommends the expanded list of information below to be included in the network plan to provide evidence of compliance with this requirement. From each of the 40 CFR 58 Appendices, include the following:

Appendix A

- Were Precision/Accuracy reports submitted to AQS for data year covered by the plan?
- Was an annual data certification package submitted for the data year covered by the plan?
- What was the frequency of flow rate verification for manual PM sampler audits?
- What was the frequency of flow rate verification for automated PM analyzer audits?
- What was the frequency of one-point QC checks for gaseous instruments?
- When was the last Annual Performance Evaluation conducted for gaseous instruments?
- When were the last two semi-annual flow rate audits for manual and automated PM monitors?
- When did PEP audits occur during the data year covered by the plan?
- When did NPAP audits occur during the data year covered by the plan?

Appendix C

- What is the instrument manufacturer and model used for each monitor?
- What is the start date of each monitor?

Appendix D

- What is the sampling season for each parameter?
- Does the network meet minimum number of monitors required?
    - For each pollutant consider MSA, population, design value, # required, # operating.
    - May include a map displaying the location of monitoring sites.

Appendix E

- For each site:
    - What is the distance from nearest road in meters?
    - What is the traffic count of nearest road?
    - What is the surrounding groundcover (e.g. paved, vegetated, gravel, etc.)?
- For each monitor:
    - Whtat is the probe height in meters?
    - If there is one, what is the distance from the nearest supporting structure in meters?
    - If there is one, what is the distance from the nearest obstruction on the roof in meters?
    - If there is one, what is the distance from the nearest obstruction not on the roof in meters?
    - What is the nearest distance from an obstructive tree in meters?
    - If there is one, what is the distance from the nearest furnace or incinerator flue in meters?
    - If there is one, what is the distance between a collocated monitors?
    - What is the unrestricted airflow in degrees?
    - What is the probe material for reactive gases (i.e. O_3, NO_2, and SO_2)?
    - For reactive gases, what is the residence time at NCore and NO_2 sites?

APPENDIX B

This appendix discusses the various monitoring objectives, site types, monitor types, method and parameter codes that an agency should report for each individual monitor in AQS and the annual monitoring network plan. Appendix H of this memo provides a suggested format where the information from each of the five sections below may be reported in the network plan.

Basic Monitoring Objectives:

Per 40 CFR Part 58, App.D 1.1, the monitoring network as a whole must be designed to meet three Basic Monitoring Objectives. Agencies must list one or more of these three Basic Monitoring Objectives for each individual monitor:

- Provide air pollution data to public in a timely manner.
- NAAQS comparison.
- Research support.

Site Types (i.e. monitoring objective types):

Each individual monitor must be designated to meet one or more of the site types (also referred to as monitoring objective types) listed below. The site types are intended to support the air quality management work indicated in the three basic air monitoring objectives and are further explained in 40 CFR Part 58, App.D 1.1.1. Site types listed below are those available for selection in AQS at the time of the release of this memo and may also be found in the AQS coding manual (Section 5.4.8) which may be found at: http://www.epa.gov/ttn/airs/airsaqs/manuals/AQS%20Data%20Coding%20Manual.pdf.

- Extreme downwind.
- Highest concentration.
- Max ozone concentration.
- Max precursor emissions impact.
- Population exposure.
- Source oriented.
- Upwind background.
- General/background.
- Regional transport.
- Welfare related impacts.
- Quality assurance.
- Other.

Monitor Types:

Each individual monitor must be designated to meet one or more of the monitor types listed below. The monitor type represents the administrative classification as determined by the purpose for the monitor in the agency sampling strategy. Note that the assignment of the monitor types "NCORE" and "PAMS" is limited to EPA Headquarters users and is done only after a complete review and approval is done for all site/monitor metadata. The monitor types listed below are those available for selection in the AQS at the time of the release of this memo and may also be found at: http://www.epa.gov/ttn/airs/airsaqs/manuals/codedescs.htm.

- IMPROVE.
- Index site.
- Industrial.
- NATTS.
- NCORE.
- Non-EPA Federal.
- PAMS.
- Proposed NCORE.
- QA Collocated.
- SLAMS.

- Special Purpose.
- Suplmntl Speciation.
- Trends Speciation.
- Tribal Monitors.
- Unofficial PAMS.

Method Code:
Each individual monitor should operate and report one particular method code. The method code is intended to identify a particular method for collecting and analyzing samples of the monitor's parameter. Available AQS method codes can be found under the "Protocols with Sampling Methodologies" section at http://www.epa.gov/ttn/airs/airsaqs/manuals/codedescs.htm. Monitors operating under an FRM or FEM designation should list one of the method codes described in the List of Designated Reference and Equivalent Methods available at http://www.epa.gov/ttn/amtic/criteria.html.

Parameter Codes:
Each individual monitoring instrument should operate and report one or more parameter codes. The parameter code is the code assigned to the parameter measured by the monitor. Parameter codes may be pollutants or non-pollutants. Available AQS parameter codes may be found at:
http://www.epa.gov/ttn/airs/airsaqs/manuals/codedescs.htm.

APPENDIX C

This appendix is based on 40 CFR 58.12(d) and is intended to highlight and clarify how to determine the appropriate sampling frequency for manual $PM_{2.5}$ samplers. Appendix H of this memo provides a suggested format for reporting in the network plan the sampling frequency for each monitor, as appropriate.

With respect to sampling frequency for $PM_{2.5}$, 40 CFR 58.12(d) states:

> (1)(i) Manual $PM_{2.5}$samplers at required SLAMS stations without a collocated continuously operating $PM_{2.5}$monitor must operate on at least a 1-in-3 day schedule.
>
> (ii) For SLAMS $PM_{2.5}$sites with both manual and continuous $PM_{2.5}$monitors operating, the monitoring agency may request approval for a reduction to 1-in-6 day $PM_{2.5}$sampling or for seasonal sampling from the EPA Regional Administrator. The EPA Regional Administrator may grant sampling frequency reductions after consideration of factors, including but not limited to the historical $PM_{2.5}$data quality assessments, the location of current $PM_{2.5}$design value sites, and their regulatory data needs. Required SLAMS stations whose measurements determine the design value for their area and that are within plus or minus 10 percent of the NAAQS; and all required sites where one or more 24-hour values have exceeded the NAAQS each year for a consecutive period of at least 3 years are required to maintain at least a 1-in-3 day sampling frequency. A continuously operating FEM or ARM $PM_{2.5}$monitor satisfies this requirement.
>
> (iii) Required SLAMS stations whose measurements determine the design value for their area and that are within plus or minus 5 percent of the daily $PM_{2.5}$NAAQS must have an FRM or FEM operate on a daily schedule. A continuously operating FEM or ARM $PM_{2.5}$monitor satisfies this requirement.
>
> (2) Manual $PM_{2.5}$samplers at NCore stations and required regional background and regional transport sites must operate on at least a 1-in-3 day sampling frequency.
>
> (3) Manual $PM_{2.5}$speciation samplers at STN stations must operate on at least a 1-in-3 day sampling frequency.

For each of the manually operated $PM_{2.5}$ samplers in an agency's network, an appropriate sampling schedule must be established and reported in the network plan in accordance with the regulations cited above.

APPENDIX D

This appendix is based on 40 CFR 58.12(e) and is intended to highlight and clarify how and when to determine the appropriate sampling frequency for PM_{10} samplers. Appendix H of this memo provides a suggested format for reporting in the network plan the sampling frequency for each monitor, as appropriate.

With respect to sampling frequency for PM_{10}, 40 CFR 58.12(e) states:

> For PM_{10}samplers, a 24-hour sample must be taken from midnight to midnight (local standard time) to ensure national consistency. The minimum monitoring schedule for the site in the area of expected maximum concentration shall be based on the relative level of that monitoring site concentration with respect to the 24-hour standard as illustrated in Figure 1. If the operating agency demonstrates by monitoring data that during certain periods of the year conditions preclude violation of the PM_{10}24-hour standard, the increased sampling frequency for those periods or seasons may be exempted by the Regional Administrator and permitted to revert back to once in six days. The minimum sampling schedule for all other sites in the area remains once every six days. No less frequently than as part of each 5-year network assessment, the most recent year of data must be considered to estimate the air quality status at the site near the area of maximum concentration. Statistical models such as analysis of concentration frequency distributions as described in "Guideline for the Interpretation of Ozone Air Quality Standards," EPA–450/479–003, U.S. Environmental Protection Agency, Research Triangle Park, NC, January 1979, should be used. Adjustments to the monitoring schedule must be made on the basis of the 5-year network assessment. The site having the highest concentration in the most current year must be given first consideration when selecting the site for the more frequent sampling schedule. Other factors such as major change in sources of PM_{10}emissions or in sampling site characteristics could influence the location of the expected maximum concentration site. Also, the use of the most recent 3 years of data might, in some cases, be justified in order to provide a more representative database from which to estimate current air quality status and to provide stability to the network. This multiyear consideration reduces the possibility of an anomalous year biasing a site selected for accelerated sampling. If the maximum concentration site based on the most current year is not selected for the more frequent operating schedule, documentation of the justification for selection of an alternative site must be submitted to the Regional Office for approval during the 5-year network assessment process. Minimum data completeness criteria, number of years of data and sampling frequency for judging attainment of the NAAQS are discussed in appendix K of part 50 of this chapter.

EPA interprets the "relative level of that monitoring site concentration" language above to mean the design concentrations that are as discussed in Section 6.3 of the *PM_{10} SIP Development Guideline* (EPA-450/2-86-001). A modified version of Figure 1 from 40 CFR 58.12(e) is included below where displayed in brackets are the design concentration bounds that should be used to determine PM10 sampling frequency. Specifically, the design concentration bounds displayed in brackets were established using the Table look-up method that is described in Section 6.3.1 of the *PM_{10} SIP Development Guideline*.

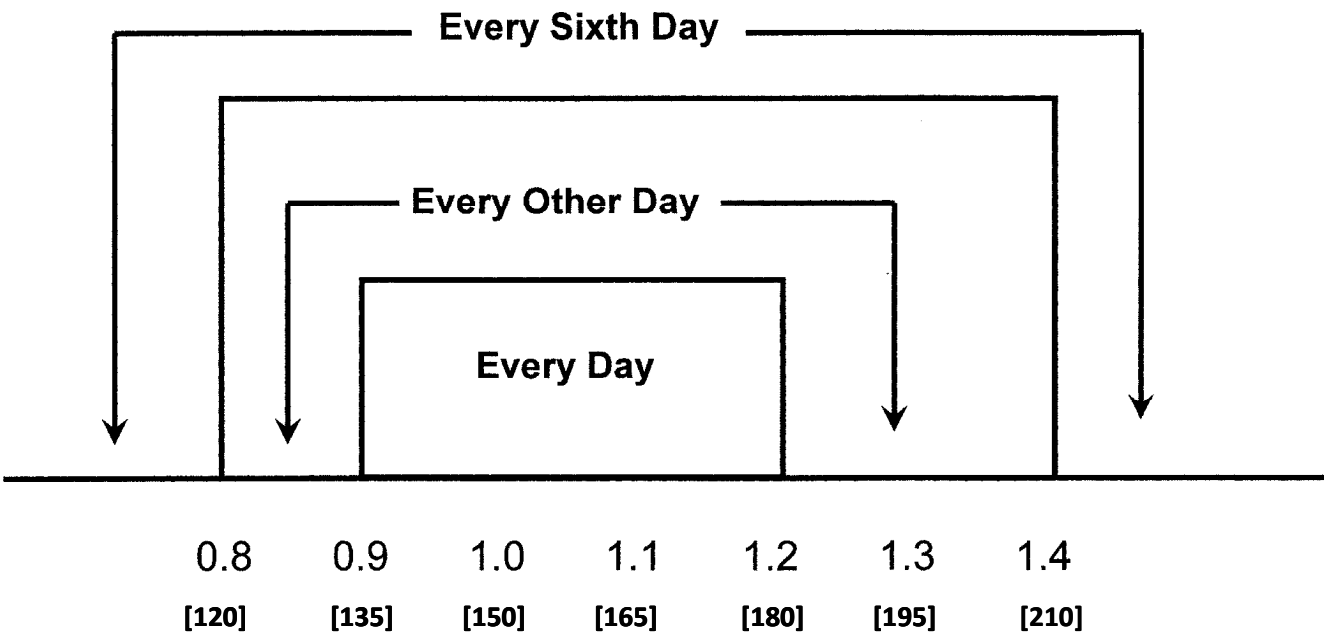

Figure 1 – Ratio to Standard

APPENDIX E

This appendix is constructed based on 40 CFR 58 Appendix A, Section 3 and is intended to clarify the SLAMS collocation requirements for $PM_{2.5}$, PM_{10}, and Pb at the Primary Quality Assurance Organization (PQAO) level. Note that collocation requirements for the $PM_{10-2.5}$ network and non-source oriented NCore Pb sites are handled at the national level and not at the PQAO level. Collocated monitors and all of the details pertaining to their operation are to be reported in the annual monitoring network plan. Appendix H of this memo provides a suggested format for reporting in the network plan the necessary information for each collocated monitor.

$PM_{2.5}$ Collocation as described in 40 CFR 58 Appendix A, Sections 3.2.5 & 3.3.5

- Both FRM and FEM instruments designated as primary monitors must:
  - Collocate at 15 percent of monitors (values of 0.5 or greater round up).
  - Have at least one collocated monitor (if the total number of monitors is less than 3) and have the first collocated monitor be of FRM designation.
- Each FEM instrument designated as a primary monitor must:
  - Have 50 percent of collocated monitors be of FRM designation, and the other 50 percent of the same FEM designation as the primary monitor.
  - Have the additional monitor be of FRM designation if an odd number of collocated monitors are required.
- Each FRM instrument designated as a primary monitor must have any required collocated monitors be of the same method designation.
- Collocated FRM samplers are to run on a 12-day sampling frequency.
- 80 percent of the collocated samplers should be located at sites within ± 20 percent of either the annual or 24-hour NAAQS.
- If an agency has no sites within ± 20 percent of either the annual or 24-hour NAAQS, 60 percent of the collocated monitors should be located at sites with annual mean concentrations among the 25 percent highest in the network.
- $PM_{2.5}$ samplers used in the $PM_{10–2.5}$ network may be counted to fulfill collocation requirements as long as the samplers are of the same method designation (from 40 CFR 58 Appendix A, Section 3.3.5).

PM_{10} Collocation as described in 40 CFR 58 Appendix A, Section 3.3.1

- Only manual PM_{10} samplers qualify for collocation.
- Each method of manual PM_{10} samplers must have 15 percent (or at least one) of the monitors collocated.
- Collocation for TSP and PM_{10} samplers must be considered separately.
- PM_{10} samplers used in the $PM_{10–2.5}$ network may be counted to fulfill collocation requirements as long as the samplers are of the same method designation.
- Collocated sites must be within the highest 25 percent annual mean concentrations, unless alternatives are approved by the Regional Administrator.
- Collocated PM_{10} samplers are to run on a 12-day schedule.

Pb Collocation as described in 40 CFR 58 Appendix A, Section 3.3.4.3

- PQAOs with only non-source-oriented NCore Pb sites do not have PQAO minimum collocation requirements. EPA is responsible for coordinating the national collocation requirements that do exist for this network and are established based on 40 CFR Appendix A, Section 3.2.6. Should EPA coordinate with a PQAO to assist with national Pb network collocation, then the collocated monitor must be of the same method designation as the primary monitor.
- All other PQAOs must implement collocation requirements for Pb following PM_{10} collocation described above (and in 40 CFR 58 Appendix A, Section 3.3.1) with the exception that the first collocated Pb site selected must be the site measuring the highest Pb concentrations in the network.

APPENDIX F

This appendix references further guidance for agencies to consider if they operate continuous $PM_{2.5}$ samplers.

Memo released on July 24, 2008:

The following describes how to integrate continuous FEM and ARM methods into a SLAMS network, including discussions of appropriate method evaluation periods and data usage. If operating FEMs that are considered non-regulatory, agencies are to include a justification for this decision.

> Implementing Continuous $PM_{2.5}$ Federal Equivalent Methods (FEMs) and Approved Regional Methods (ARMs) in State or Local Air Monitoring Station (SLAMS) Networks".
> http://www.epa.gov/ttn/amtic/files/ambient/pm25/femarmslam.pdf

Memo released on June 1, 2006:

The following memo outlines how to report continuous $PM_{2.5}$ data to AQS, including parameter codes for both FEMs and non-FEMs. Please include these parameter codes in the detailed site information table and provide a justification for treatment of non-FEM data as either 88501 or 88502.

> "Technical Note on Reporting $PM_{2.5}$ Continuous Monitoring and Speciation Data to the Air Quality System (AQS)"
> http://www.epa.gov/ttn/amtic/files/ambient/pm25/datamang/contrept.pdf

APPENDIX G

This appendix includes sample tables that can be incorporated into the annual monitoring network plan to display the minimum monitoring requirements and design values for each of the criteria pollutants. EPA recommends that agencies designate a single section in their network plans that specifically focuses on and discusses the minimum monitoring requirements and design values for each area within their jurisdiction. Within this section of the network plan, in addition to the tables included below, agencies are encouraged to include a general statement that briefly summarizes which minimum monitoring requirements are, and which are not being met. It is also good for agencies to note that in some cases although the regulation may already be in place, monitoring requirements may not come into play until a later date from which the submitted network plan is intended to cover (e.g. CO near-road monitoring does not come into effect until 2015 and 2017 according to 40 CFR 58.13(e)).

Ozone

(Note: Refer to section 4.1 and Table D-2 of Appendix D to 40 CFR Part 58)

Table 2. Minimum Monitoring Requirements for Ozone.

MSA	County(ies)	Population (base year)	8-hr Design Value [ppb] (years)	Design Value site (name, AQS ID)	# Monitors (Required:Active)	#Monitors Needed

Monitors required for SIP or Maintenance Plan:

_____

$PM_{2.5}$

(Note: Refer to sections 4.7.1, 4.7.2 and Table D-5 of Appendix D to 40 CFR Part 58)

Table 3a. Minimum Monitoring Requirements for Annual $PM_{2.5}$ (SLAMS and Continuous)

MSA	County(ies)	Population (base year)	Annual Design Value [µg/m^3] (years)	Annual Design Value site (name, AQS ID)	# SLAMS Monitors (Required:Active)	# Continuous Monitors (Required:Active)	Monitors Needed (SLAMS:Continuous)

Table 3b. Minimum Monitoring Requirements for 24-hour $PM_{2.5}$ (SLAMS and Continuous)

MSA	County(ies)	Population (base year)	24-hour Design Value [µg/m^3] (years)	24-hour Design Value site (name, AQS ID)	# SLAMS Monitors (Required:Active)	# Continuous Monitors (Required:Active)	Monitors Needed (SLAMS:Continuous)

Monitors required for SIP or Maintenance Plan:

Background and Transport sites required per 40 CFR 58, App.D 4.7.3:

_____

PM_{10}
(Note: Refer to section 4.6 and Table D-4 of Appendix D to 40 CFR Part 58)

Table 4. Minimum Monitoring Requirements for PM_{10}.

MSA	County(ies)	Population (base year)	Design Concentration* [µg/m^3] (years)	Design Concentration* site (name, AQS ID)	# Expected Exceedances (years)	# Monitors (Required:Active)	Monitors Needed

*see Section 6.3 of the *PM10 SIP Development Guideline* (EPA-450/2-86-001): http://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P1006IKV.txt

Monitors required for SIP or Maintenance Plan:

_____

NO_2
(Note: Refer to section 4.3 of Appendix D to 40 CFR Part 58)

Table 5. Minimum Monitoring Requirements for NO_2.

CBSA	Population (base year)	Max AADT counts (year)	# Near-road Monitors [Required:Active]	# Area-wide Monitors [Required:Active]	Monitors Needed [Near-road:Area-wide]	Annual Design Value [ppb] (years)	Annual Design Value site (name, AQS ID)	1-hour Design Value [ppb] (years)	1-hour Design Value site (name, AQS ID)

Monitors required for SIP or Maintenance Plan:
Monitors required for PAMS:
Regional Administrator Required monitors per 40 CFR 58, App.D 4.3.4:

_____

SO_2
(Note: Refer to section 4.4 of Appendix D to 40 CFR Part 58)

Table 6. Minimum Monitoring Requirements for SO_2.

CBSA	County(ies)	Population (year)	Total SO_2[1] [tons/year]	Population Weighted Emissions Index[2] [million persons-tons per year]	# Monitors (Required:Active)	Monitors Needed

[1]Using NEI data
[2]Calculated by multiplying CBSA population and total SO_2 and dividing product by one million

Monitors required for SIP or Maintenance Plan:
Regional Administrator Required monitors per 40 CFR 58, App.D 4.4.3:

_____

CO
(Note: Refer to section 4.2 of Appendix D to 40 CFR Part 58)

Table 7. Minimum Monitoring Requirements for CO.

CBSA	Population (base year)	# Near-road Monitors [Required:Active]	Monitors Needed	8-hour Design Value [ppb] (years)	Annual Design Value site (name, AQS ID)	1-hour Design Value [ppb] (years)	1-hour Design Value site (name, AQS ID)

Monitors required for SIP or Maintenance Plan:
Regional Administrator Required monitors per 40 CFR 58, App.D 4.2.2:

_____

Pb
(Note: Refer to section 4.5 of Appendix D to 40 CFR Part 58)

Table 8. Minimum Monitoring Requirements for Pb.

NCore Pb Monitoring

NCore Site (name, AQS ID)	CBSA	Population (year)	# Monitors (Required:Active)	Monitors Needed

Source-Oriented Pb Monitoring (including airports)

Source Name	Address	Pb Emissions (tons per year)	Emission Inventory Source & Data Year	Max 3-Month Design Value* [µg/m^3]	Design Value date (third month, year)	# Monitors (Required:Active)	Monitors Needed

*consider data from the past 3 years.

Monitors required for SIP or Maintenance Plan:
Regional Administrator Required monitors per 40 CFR 58, App.D 4.5(c):

APPENDIX H

This appendix displays a suggested table format for agencies to use to report in their annual monitoring network plan (as required per 40 CFR Part 58.10) all of the detailed site and monitor specific information for each of the stations in their monitoring network.

Site Name

[Give a broad overview of the site and rationale for its location. Include a description of site and purpose of monitoring for each pollutant at the site. Photographs and a map of the site are encouraged.]

Local site name	*Sample Site*		
AQS ID (XX-XXX-XXXX)	12-345-6789		
GPS coordinates (decimal degrees)	37.785381, 122.398047		
Street Address	75 Hawthorne Street, San Francisco, CA 94105		
County	San Francisco		
Distance to roadways (meters)	36		
Traffic count (AADT, year)	15,000 (2010)		
Groundcover (e.g. asphalt, dirt, sand, etc.)	Asphalt		
Representative statistical area name (e.g. MSA, CBSA, etc.)	SAN FRANCISCO-OAKLAND-FREMONT Metro Area		
Parameter (POC)	Ozone (1)	$PM_{2.5}$ (3)	
Basic monitoring objective(s) (see App.B)	NAAQS, Public reporting	NAAQS, research	
Site type(s) (see App.B)	MAX OZONE	QUALITY ASSURANCE	
Monitor type(s) (see App.B)	SLAMS/PAMS	QA COLLOCATED	
Instrument manufacturer and model	2B Technologies 202	Andersen RAAS2.5-200	
Method code (see App.B)	190	128	
FRM/FEM/ARM/other	FEM	FRM	
Parameter code (see App.B)	44201	88101	
Spatial scale (e.g. micro, neighborhood, etc.)	Urban	Neighborhood	
Monitoring start date (MM/DD/YYYY)	01/01/2006	01/01/1999	
Sampling frequency (e.g. 1-in-3, continuous, etc.)	continuous	1-in-3	
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	
Probe height (meters)	5.3	5.2	
Distance from supporting structure (meters)	2.2	2.1	
Distance from obstructions on roof (meters)	N/A	N/A	
Distance from obstructions not on roof (meters)	25	29	
Distance from trees (meters)	35	39	
Distance to furnace or incinerator flue (meters)	13	15	
Distance between collocated monitors (meters)	N/A	3	
Unrestricted airflow (degrees)	360	360	
Probe material for reactive gases (e.g. Pyrex, stainless steel, etc.)	Teflon	N/A	
Residence time for reactive gases (seconds)	6	N/A	
Will there be changes within the next 18 months? (Y/N)	N	Y	
Is it suitable for comparison against the annual PM2.5? (Y/N)	N/A	Y	
Frequency of flow rate verification for manual PM samplers (e.g. weekly, bi-weekly, monthly, etc.)	N/A	monthly	
Frequency of flow rate verification for automated PM analyzers (e.g. weekly, bi-weekly, monthly, etc.)	N/A	N/A	
Frequency of one-point QC check for gaseous instruments (e.g. weekly, bi-weekly, monthly, etc.)	bi-weekly	N/A	
Last Annual Performance Evaluation for gaseous parameters (MM/DD/YYYY)	02/28/2012	N/A	
Last two semi-annual flow rate audits for PM monitors (MM/DD/YYYY, MM/DD/YYYY)	N/A	07/12/2011 01/15/2012	